

Claims

[c1] 1. A magazine data storage element for use in a magazine-based data library that is capable of transporting magazines within the library, the data cartridge magazine comprising:

a frame structure that defines a space for accommodating a plurality of hard disk drives that each have a hard disk drive-interconnect connector;

an interconnect structure comprising:

a plurality of interconnect-hard disk drive connectors with each of said plurality of interconnect-hard disk drive connectors capable of connecting with a hard disk drive-interconnect connector;

a magazine-drive connector for connecting with a drive-magazine connector; and

connection circuitry for connecting each of said plurality of interconnect-hard disk drive connectors with said magazine-drive connector; and

a magazine transport means for being engaged by a portion of a magazine transport device associated with a magazine-based library and used to displace a magazine towards or away from a shelf within the magazine-based library.

[c2] 2. A magazine data storage element, as claimed in claim 1, wherein:

said frame structure comprises:

a first pair of parallel side surfaces;

a second pair of parallel side surfaces that are perpendicular to said first pair of parallel side surfaces;

a third pair of parallel side surfaces that are perpendicular to said first pair of parallel side surfaces and said second pair of parallel side surface; and

a hole in one side surface of said first, second and third pairs of parallel side surfaces for exposing said magazine-drive connector.

[c3] 3. A magazine data storage element, as claimed in claim 1, wherein:

said frame structure comprises:

a first pair of parallel side surfaces;

a second pair of parallel side surfaces that are perpendicular to said first pair of parallel side surfaces;

a third pair of parallel side surfaces that are perpendicular to said first pair of parallel side surfaces and said second pair of parallel side surface;

a first hole in one side surface of said first pair of parallel side surfaces; and

a second hole in the other side surface of said first pair of parallel side surfaces.

[c4] 4. A magazine data storage element, as claimed in claim 1, wherein:
said frame structure comprises a cage capable of holding two of said plurality of hard disk drives.

[c5] 5. A magazine data storage element, as claimed in claim 1, wherein:
said frame structure comprises a plurality of cages with each of said plurality of cages capable of holding two of said plurality of hard disk drives.

[c6] 6. A magazine data storage element, as claimed in claim 1, wherein:
said frame structure comprises:
a base surface; and
a cage that is operatively attached to said base surface and capable of holding two of said plurality of hard disk drives.

[c7] 7. A magazine data storage element, as claimed in claim 1, wherein:
said frame structure comprises:
a base surface; and
a plurality of cages that are each operatively attached to said base surface and capable of holding two of said plurality of hard disk drives.

- [c8] 8. A magazine data storage element, as claimed in claim 1, further comprising:
a plurality of hard disk drives located within said space defined by said frame structure.
- [c9] 9. A magazine data storage element, as claimed in claim 1, further comprising:
a drive transport feature for being engaged by a insertion/ejection device of a magazine data storage element drive to move the magazine data store element into and out of the magazine data storage element drive.
- [c10] 10. A magazine data storage element, as claimed in claim 1, wherein:
said interconnect structure comprises a solid state memory element.
- [c11] 11. A magazine data storage element, as claimed in claim 10, wherein:
said solid state memory element comprises a EEPROM.
- [c12] 12. A magazine data storage element, as claimed in claim 1, further comprising:
label means for use in identifying the data cartridge magazine.
- [c13] 13. A magazine data storage element, as claimed in

claim 12, wherein:

said label means comprises an indentation located in a portion of said frame structure that would be considered a side wall when the magazine data storage element has an operational orientation with respect to a shelf within a magazine-based library, wherein said indentation is for accommodating a label for identifying the magazine data storage element.

[c14] 14. A magazine data storage element, as claimed in

claim 12, wherein:

said label means comprises:

a first indentation located in a first portion of said frame structure; and

a second indentation in a second portion of said frame structure that is separated from said first portion;

wherein said first indentation is for accommodating a first label for identifying the magazine;

wherein said second indentation is for accommodating a second label for identifying the magazine;

wherein said first and second portions are each located on a section of said frame structure that would be considered a side wall when the magazine data storage element has an operational orientation with respect to a shelf within a magazine-based library system.

[c15] 15. A magazine data storage element, as claimed in claim 14, wherein:
said first portion being located on a first side wall; and
said second portion being located on a second side wall
that is parallel to said first side wall.

[c16] 16. A magazine data storage element, as claimed in claim 12, wherein:
said label means comprises a sleeve for holding a label.

[c17] 17. A magazine data storage element, as claimed in claim 12, wherein:
said label means comprises a radio-frequency identifier.

[c18] 18. A magazine data storage element, as claimed in claim 1, further comprising:
a label that identifies the magazine data storage element
and is attached to said frame structure at a location that
is discernable by a label reader located within a maga-
zine-based library.

[c19] 19. A magazine data storage element for use in a maga-
zine-based data library that is capable of transporting
magazines within the library, the data cartridge maga-
zine comprising:
a frame structure that defines a space for accommodat-
ing a plurality of hard disk drives;

a plurality of hard disk drives that are located in said space defined by said frame structure and that each have a hard disk drive-interconnect connector; an interconnect structure comprising:
a plurality of interconnect-hard disk drive connectors with each of said plurality of interconnect-hard disk drive connectors capable of connecting with a hard disk drive-interconnect connector;
a magazine-drive connector for connecting with a drive-magazine connector; and
connection circuitry for connecting each of said plurality of interconnect-hard disk drive connectors with said magazine-drive connector; and
a magazine transport means for being engaged by a portion of a magazine transport device associated with a magazine-based and used to displace a data cartridge magazine towards or away from a shelf within the magazine-based data cartridge library.

- [c20] 20. A magazine data storage element, as claimed in claim 19, wherein:
each of said plurality of hard disk drives has a serial signal interface.
- [c21] 21. A magazine data storage element, as claimed in claim 19, wherein:
each of said plurality of hard disk drives is one of an se-

rial ATA drive, serial SCSI drive and FibreChannel drive.

- [c22] 22. A magazine data storage element, as claimed in claim 19, wherein:
each of said plurality of hard disk drives is an 2 1/2"hard disk drive.
- [c23] 23. A magazine data storage element, as claimed in claim 19, wherein:
said magazine transport means comprises a protrusion that is associated with one of said bottom wall and said side wall.
- [c24] 24. A magazine data storage element, as claimed in claim 19, wherein:
said magazine transport means comprises an indentation that is associated with one of said bottom wall and said side wall.
- [c25] 25. A magazine data storage element, as claimed in claim 19, wherein:
said magazine transport means comprises a hole that is associated with one of said bottom wall and said side wall.
- [c26] 26. A magazine data storage element, as claimed in claim 19, wherein:
said magazine transport means comprises a pair of pro-

trusions, with each of said pair of protrusions associated with one of said bottom wall and said side wall.

- [c27] 27. A magazine data storage element, as claimed in claim 19, wherein:
said magazine transport means comprises a pair of indentations, with each of said pair of indentations associated with one of said bottom wall and said side wall.
- [c28] 28. A magazine data storage element, as claimed in claim 19, wherein:
said magazine transport means comprises a pair of holes, with each of said pair of holes associated with one of said bottom wall and said side wall.
- [c29] 29. A magazine data storage element, as claimed in claim 19, further comprising:
an engaged/disengaged structure for use with a sensor that is used to determine if a magazine transport device associated with a magazine-based library is engaged/disengaged to/from the magazine data storage element.
- [c30] 30. A magazine data storage element, as claimed in claim 19, further comprising:
a magazine orientation structure for ensuring that the magazine data storage element has a desired orientation within a magazine-based library.

[c31] 31. A magazine data storage element, as claimed in claim 30, wherein:
said magazine orientation structure comprises an asymmetric structure this is asymmetric relative to a plane that vertically bisects the magazine data storage element.

[c32] 32. A magazine data storage element, as claimed in claim 31, wherein:
said asymmetric structure comprises a pair of parallel rails.

[c33] 33. A magazine data storage element, as claimed in claim 19, further comprising:
a retaining structure for use in holding the magazine data storage element in association with a shelf within a magazine-based library but releasing the magazine data storage element when a force is applied to the magazine data storage element by a magazine transport device associated with the magazine-based library.

[c34] 34. A magazine data storage element, as claimed in claim 33, wherein:
said retaining structure comprises a notch for engaging a notch-engaging structure associated with a shelf.

[c35] 35. A magazine data storage element, as claimed in

claim 33, wherein:
said retaining structure comprises a detent for use in
engaging a notch associated with a shelf.

[c36] 36. A magazine data storage element, as claimed in
claim 33, wherein:
said retaining structure comprises:
a detent for engaging a notch associated with a shelf;
and
a spring for applying a force to said detent.

[c37] 37. A magazine data storage element drive for use with a
magazine data storage element comprised of a frame
structure, a plurality of hard disk drives supported by the
frame structure, and an interconnect structure that ex-
tends between each of the hard disk drives and a maga-
zine-drive connector, the drive comprising:
a frame for supporting a magazine data storage element;
and
a magazine data storage element cable, operatively at-
tached to said frame, comprising a drive-magazine con-
nector for connecting with a magazine-drive connector
of a magazine data storage element, a drive-device con-
nector, and conductors extending between said drive-
magazine connector and said drive-device connector.

[c38] 38. A magazine data storage element drive, as claimed in

claim 37, wherein:
said frame comprises a guide for aligning a magazine-drive connector of a magazine data storage element with said drive-magazine connector.

- [c39] 39. A magazine data storage element drive, as claimed in claim 37, wherein:
said drive-magazine connector comprises a plurality of pins.
- [c40] 40. A magazine data storage element drive, as claimed in claim 39, wherein:
said drive-magazine connector comprises a plurality of spring-loaded pins.
- [c41] 41. A magazine data storage element drive, as claimed in claim 37, further comprising:
an insertion/ejection device for:
 - (a) applying a force to a magazine data storage element that causes the magazine plug of a magazine data storage element to move towards said drive-magazine connector; and
 - (b) applying a force to a magazine data storage element that causes the magazine plug of a magazine data storage element to move away from said drive-magazine connector.

[c42] 42. A magazine data storage element drive, as claimed in claim 41, further comprising:
a fan.

[c43] 43. A magazine data storage element drive, as claimed in claim 37, wherein:
said frame comprises an exterior housing;
wherein said exterior housing comprises:
a top surface,
a bottom surface that is separated from and substantially parallel to said top surface,
a first side surface that is substantially perpendicular to said top surface;
a second side surface that is separated from and substantially parallel to said first side surface;
a front surface that is substantially perpendicular to said top surface and said first side surface; and
a back surface that is separated from and substantially parallel to said front surface;
wherein said front surface defines a opening for receiving a magazine data storage element.

[c44] 44. A magazine data storage element drive, as claimed in claim 43, wherein:
said exterior housing having a height that is the distance between said top surface and said bottom surface; and
said exterior housing having a width that is the distance

between first side surface and said second side; and wherein said height and said width of said housing conform to the specifications of one of a rack mounted LTO, DLT and SAIT tape drive.

[c45] 45. A magazine-based library for use with a magazine data storage element comprised of a frame structure, a plurality of hard disk drives supported by the frame structure, and an interconnect structure that extends between each of the hard disk drives and a magazine drive connector, the magazine-based library comprising:

- a frame;
- a shelf system, operatively attached to said frame, capable of supporting at least two magazine data storage elements and comprising at least one shelf;
- a magazine data storage element drive, operatively attached to said frame, and comprising a drive-magazine connector for connecting with a magazine-drive connector of a magazine data storage element to establish a connection between a magazine data storage element and a host computer so that data can be transferred between the magazine data storage element and the host computer;
- a magazine transport device for moving a magazine data storage element between said shelf and said magazine data storage element drive.

[c46] 46. A magazine based library, as claimed in claim 45, wherein;
said magazine transport device comprises:
a magazine picker for displacing a magazine data storage element towards and away from said shelf and towards and away from said magazine data storage element drive; and
an elevator for moving said magazine picker to a location adjacent said shelf and to a location adjacent to said magazine data storage element drive.

[c47] 47. A magazine-based library, as claimed in claim 45, further comprising:
an entry/exit port for conveying a magazine data storage element between an environment that is exterior to said frame and a space interior to said frame.

[c48] 48. A magazine-based library, as claimed in claim 45, further comprising:
a transport space that defines a volume within said space defined by said frame within which said magazine transport device operates;
wherein said transport space is bounded by a first transport space vertical plane and a second transport space vertical plane that is substantially parallel to said first transport space vertical plane;

wherein said transport space has a transport space depth that is the distance between said first and second transport space vertical planes as measured along a line that is perpendicular to said first and second transport space vertical planes; and

a magazine space that defines a volume within said space defined by said frame within which the at least two magazine data storage elements reside when operationally oriented with respect to said shelf system such that said magazine transport device is able to displace a magazine data storage element relative to said shelf system and operationally located so as to not otherwise interfere with movement of said magazine transport device;

wherein said magazine space is bounded by a first magazine space vertical plane and a second magazine space vertical plane that is substantially parallel to said first magazine space vertical plane;

wherein said magazine space has a magazine space depth that is the distance between said first and second magazine space vertical planes as measured along a line that is perpendicular to said first and second magazine space vertical planes;

wherein said transport space first and second vertical planes and said magazine space first and second vertical planes are substantially parallel to one another;

said magazine space depth is greater than said magazine space depth and less than twice said magazine space depth.

[c49] 49. A magazine-based library, as claimed in claim 45, further comprising:

a drive bay assembly for holding said magazine data storage element drive.

[c50] 50. A magazine-based library, as claimed in claim 49, wherein:

said drive bay assembly comprising:

a housing structure that defines a first open side which is exposed to said magazine transport device, a second open side which is exposed to a space that is operator accessible, and a passageway extending between said first and second open sides;

a housing plug that is attached to said housing and faces said second open side; and

a sled for holding a magazine data storage element drive that has a front side with a receptacle for receiving a magazine data storage element and a back side with a plug interface for receiving electrical signals;

said sled comprising:

a frame that extends from a first end to a second end and is capable of holding a magazine data storage element drive such that the receptacle of a magazine data

storage element drive is adjacent to said first end and the plug interface of the magazine data storage element drive is adjacent to said second end; and electrical connection means for establishing an electrical connection between the host plug interface of a magazine data storage element drive and a sled plug that faces toward said first end of said sled and is capable of mating with said housing plug; wherein when said sled is positioned in said passageway such that said first end of said frame is adjacent to said first open side and said second end of said frame is adjacent to said second open side, said housing plug faces said sled plug.

[c51] 51. A magazine-based library, as claimed in claim 45, further comprising:
an operator alterable space located with a space defined by said frame;
wherein said operator alterable space comprises a library mounting structure for receiving a module, a first side that is exposed to said magazine transport device and a second side that allows an operator to attach a module to said mounting structure.

[c52] 52. A magazine-based library, as claimed in claim 51, further comprising:
a drive bay assembly module comprising:

a housing structure that defines a first open side which is exposed to said magazine transport device, a second open side which is exposed to a space that is operator accessible, and a passageway extending between said first and second open sides;

said housing structure comprising a drive bay mounting structure for interfacing with said library mounting structure such that when said drive bay assembly module is mounted within said space defined by said frame, said first open side is exposed to said magazine transport device and said second open side is exposed to said space that is operator accessible;

a housing plug that is attached to said housing and faces said second open side; and

a sled for holding a magazine data storage element drive that has a front side with a receptacle for receiving a magazine data storage element and a back side with a plug interface for receiving electrical signals;

said sled comprising:

a frame that extends from a first end to a second end and is capable of holding a magazine data storage element drive such that the receptacle of a magazine data storage element drive is adjacent to said first end and the plug interface of the magazine data storage element drive is adjacent to said second end; and

electrical connection means for establishing an electrical

connection between the host plug interface of a magazine data storage element drive and a sled plug that faces toward said first end of said sled and is capable of mating with said housing plug; wherein when said sled is positioned in said passageway such that said first end of said frame is adjacent to said first open side and said second end of said frame is adjacent to said second open side, said housing plug faces said sled plug.

[c53] 53. A magazine-based data cartridge library, as claimed in claim 51, further comprising:
a magazine bay assembly module comprising:
a housing that defines an interior space that is capable of accommodating a magazine data storage element and an opening for receiving a magazine data storage element;
said housing structure comprising a magazine bay mounting structure for interfacing with said library mounting structure such that when said magazine bay assembly module is mounted within said space defined by said frame, said opening is exposed to at least one of said magazine transport device.

[c54] 54. A magazine-based library, as claimed in claim 45, further comprising:
a power supply, operatively attached to said frame, for

receiving AC power from an external environment and producing DC power in a form suitable for use by said magazine data storage element drive; and a conductor, operatively attached to said frame, for conveying DC power from said power supply to said magazine data storage element drive; wherein said conductor has a first flat external surface and a second flat external surface that is substantially parallel to said first flat external surface.

[c55] 55. A magazine-based library, as claimed in claim 45, wherein:

 said frame comprising:

 a first frame that defines a first side;

 a first passageway extending through a portion of said first side;

 a second frame that defines a second side; and

 a second passageway extending through a portion of said second side;

 wherein said magazine transport device is capable of moving a magazine data storage element within said first frame, moving a magazine data storage element through said first and second passageways, and moving a magazine data storage element within said second frame.

[c56] 56. A magazine based data cartridge library, as claimed in claim 55, wherein:

said magazine transport device comprising:
a first magazine transport device for moving a magazine
data storage element within said first frame; and
a second magazine transport device for moving a maga-
zine data storage element within said second frame.

[c57] 57. A magazine-based data cartridge library, as claimed
in claim 55, wherein:
said magazine transport device comprising:
a first magazine transport device for moving a magazine
data storage element within said first frame;
a second magazine transport device for moving a maga-
zine data storage element through said first and second
passageways; and
a third magazine transport device for moving a magazine
data storage element within said second frame.

[c58] 58. A magazine-based data cartridge library comprising:
a frame;
a shelf system, operatively attached to said frame, capa-
ble of supporting at least two magazines, with each of
the magazines being one of a magazine data storage el-
ement and a data cartridge magazine, and comprising at
least one shelf;
a data cartridge drive, operatively attached to said frame,
for transferring data between a host computer and a
recording medium located within a cartridge;

a magazine data storage element drive, operatively attached to said frame, for transferring data between a host computer and a magazine data storage element comprised of a plurality of hard disk drives; a cartridge transport, operatively attached to said frame, for moving a data cartridge between a data cartridge magazine and said data cartridge drive; a magazine transport device, operatively attached to said frame, that is capable of moving, within a space defined by said frame, a magazine that is either a data cartridge magazine or a magazine data storage element.

[c59] 59. A magazine-based library, as claimed in claim 58,

wherein:

said magazine transport device comprises:

a magazine picker for displacing a magazine towards and away from said shelf; and
an elevator for moving said magazine picker.

[c60] 60. A magazine-based library, as claimed in claim 59,

wherein:

said cartridge transport comprises said elevator.

[c61] 61. A magazine based library, as claimed in claim 58,

wherein;

said magazine transport device comprises:

a magazine picker for displacing a magazine data stor-

age element towards and away from said shelf and towards and away from said magazine data storage element drive and for displacing a data cartridge magazine towards and away from said shelf; and
an elevator for moving said magazine picker to a location adjacent said shelf and to a location adjacent to said magazine data storage element drive.

[c62] 62. A magazine-based library, as claimed in claim 58, further comprising:
an entry/exit port for conveying a magazine that is either a magazine data storage element or a data cartridge magazine between an environment that is exterior to said frame and a space interior to said frame.

[c63] 63. A magazine-based library, as claimed in claim 58, further comprising:
a transport space that defines a volume within said space defined by said frame within which said magazine transport device operates;
wherein said transport space is bounded by a first transport space vertical plane and a second transport space vertical plane that is substantially parallel to said first transport space vertical plane;
wherein said transport space has a transport space depth that is the distance between said first and second transport space vertical planes as measured along a line that

is perpendicular to said first and second transport space vertical planes; and

a magazine space that defines a volume within said space defined by said frame within which the at least two magazine data storage elements reside when operationally oriented with respect to said shelf system such that said magazine transport device is able to displace a magazine data storage element relative to said shelf system and operationally located so as to not otherwise interfere with movement of said magazine transport device;

wherein said magazine space is bounded by a first magazine space vertical plane and a second magazine space vertical plane that is substantially parallel to said first magazine space vertical plane;

wherein said magazine space has a magazine space depth that is the distance between said first and second magazine space vertical planes as measured along a line that is perpendicular to said first and second magazine space vertical planes;

wherein said transport space first and second vertical planes and said magazine space first and second vertical planes are substantially parallel to one another;

said magazine space depth is greater than said magazine space depth and less than twice said magazine space depth.

[c64] 64. A magazine-based library, as claimed in claim 58, further comprising:

a drive bay assembly for holding said magazine data storage element drive.

[c65] 65. A magazine-based library, as claimed in claim 64, wherein:

said drive bay assembly comprising:

a housing structure that defines a first open side which is exposed to said magazine transport device, a second open side which is exposed to a space that is operator accessible, and a passageway extending between said first and second open sides;

a housing plug that is attached to said housing and faces said second open side; and

a sled for holding a magazine data storage element drive that has a front side with a receptacle for receiving a magazine data storage element and a back side with a plug interface for receiving electrical signals;

said sled comprising:

a frame that extends from a first end to a second end and is capable of holding a magazine data storage element drive such that the receptacle of a magazine data storage element drive is adjacent to said first end and the plug interface of the magazine data storage element drive is adjacent to said second end; and

electrical connection means for establishing an electrical connection between the host plug interface of a magazine data storage element drive and a sled plug that faces toward said first end of said sled and is capable of mating with said housing plug; wherein when said sled is positioned in said passageway such that said first end of said frame is adjacent to said first open side and said second end of said frame is adjacent to said second open side, said housing plug faces said sled plug.

- [c66] 66. A magazine-based library, as claimed in claim 58, further comprising:
 - an operator alterable space located with a space defined by said frame; wherein said operator alterable space comprises a library mounting structure for receiving a module, a first side that is exposed to said magazine transport device and a second side that allows an operator to attach a module to said mounting structure.
- [c67] 67. A magazine-based library, as claimed in claim 66, further comprising:
 - a magazine data storage element drive bay assembly module comprising:
 - a housing structure that defines a first open side which is exposed to said magazine transport device, a second

open side which is exposed to a space that is operator accessible, and a passageway extending between said first and second open sides;

said housing structure comprising a drive bay mounting structure for interfacing with said library mounting structure such that when said drive bay assembly module is mounted within said space defined by said frame, said first open side is exposed to said magazine transport device and said second open side is exposed to said space that is operator accessible;

a housing plug that is attached to said housing and faces said second open side; and

a sled for holding a magazine data storage element drive that has a front side with a receptacle for receiving a magazine data storage element and a back side with a plug interface for receiving electrical signals;

said sled comprising:

a frame that extends from a first end to a second end and is capable of holding a magazine data storage element drive such that the receptacle of a magazine data storage element drive is adjacent to said first end and the plug interface of the magazine data storage element drive is adjacent to said second end; and

electrical connection means for establishing an electrical connection between the host plug interface of a magazine data storage element drive and a sled plug that

faces toward said first end of said sled and is capable of mating with said housing plug; wherein when said sled is positioned in said passageway such that said first end of said frame is adjacent to said first open side and said second end of said frame is adjacent to said second open side, said housing plug faces said sled plug.

[c68] 68. A magazine-based data cartridge library, as claimed in claim 66, further comprising:

- a data cartridge drive bay assembly module comprising:
 - a housing structure that defines a first open side, a second open side, and a passageway extending between said first and second open sides;
 - said housing structure comprising a drive bay mounting structure for interfacing with said library mounting structure such that when said drive bay assembly module is mounted within said space defined by said frame, said first open side is exposed to said cartridge transport and said second open side is exposed to said space that is operator accessible;
- a housing plug that is attached to said housing and faces said second open side; and
- a sled for holding a drive that has a front side with a receptacle for receiving a data cartridge and a back side with a plug interface for receiving electrical signals;

said sled comprising:
a frame that extends from a first end to a second end
and is capable of holding a drive such that the receptacle
of a drive is adjacent to said first end and the plug inter-
face of the drive is adjacent to said second end; and
electrical connection means for establishing an electrical
connection between the plug interface of a data cartridge
drive and a sled plug that faces toward said first end of
said sled and is capable of mating with said housing
plug;
wherein when said sled is positioned in said passageway
such that said first end of said frame is adjacent to said
first open side and said second end of said frame is ad-
jacent to said second open side, said housing plug faces
said sled plug.

[c69] 69. A magazine-based data cartridge library, as claimed
in claim 66, further comprising:
a magazine bay assembly module comprising:
a housing that defines an interior space that is capable
of accommodating either a magazine data storage ele-
ment or a data cartridge magazine and an opening for
receiving a magazine data storage element or a data car-
tridge magazine;
said housing structure comprising a magazine bay
mounting structure for interfacing with said library

mounting structure such that when said magazine bay assembly module is mounted within said space defined by said frame, said opening is exposed to at least one of said magazine transport device and said cartridge transport.

[c70] 70. A magazine-based library, as claimed in claim 58, further comprising:

a power supply, operatively attached to said frame, for receiving AC power from an external environment and producing DC power in a form suitable for use by said magazine data storage element drive and said data cartridge drive; and

a conductor, operatively attached to said frame, for conveying DC power from said power supply to said magazine data storage element drive and said data storage drive;

wherein said conductor has a first flat external surface and a second flat external surface that is substantially parallel to said first flat external surface.

[c71] 71. A magazine-based library, as claimed in claim 58, wherein:

said frame comprising:

a first frame that defines a first side;

a first passageway extending through a portion of said first side;

a second frame that defines a second side; and
a second passageway extending through a portion of
said second side;
wherein said magazine transport device is capable of
moving a magazine data storage element within said first
frame, moving a magazine data storage element through
said first and second passageways, and moving a maga-
zine data storage element within said second frame.

[c72] 72. A magazine based data cartridge library, as claimed
in claim 71, wherein:
said magazine transport device comprising:
a first magazine transport device capable of moving ei-
ther a magazine data storage element or a data cartridge
magazine within said first frame; and
a second magazine transport device capable of moving a
either a magazine data storage element or a data car-
tridge magazine within said second frame.

[c73] 73. A magazine-based data cartridge library, as claimed
in claim 71, wherein:
said magazine transport device comprising:
a first magazine transport device capable of moving ei-
ther a magazine data storage element or a data cartridge
magazine within said first frame;
a second magazine transport device capable of moving
either a magazine data storage element or a data car-

tridge magazine through said first and second passageways; and

a third magazine transport device capable of moving either a magazine data storage element or a data cartridge magazine within said second frame.